

REMARKS***A. Overview***

Claims 1-44 were originally pending in this application. Claims 31-42 have been cancelled without prejudice. New claims 45-80 have been added. The present response is an earnest attempt to place the application in proper form for immediate allowance. Reconsideration and passage to issuance is therefore respectfully requested.

B. Allowed Claims

The finding of allowability of claims 6-11, 14, and 44 is gratefully acknowledged. These claims have been put in allowable form as follows:

- a. New claim 50 is a combination of allowable claim 6 with independent claim 1 and intervening claims 4 and 5.
- b. New independent claim 54 is a combination of allowable claim 7 in combination with base claim 1 and intervening claim 4.
- c. New dependent claims 55-58 are identical to allowed claims 8-11.
- d. New independent claim 62 is a combination of allowed claim 14, its base claim 1, and intervening claims 4, 5 and 6.
- e. New independent claim 65 is a combination of allowed claim 44, with its base claim 43 (there are no intervening claims).

It is therefore respectfully submitted that new claims 50, 54-58, 62, and 65 are in allowable form.

C. Objections to Drawings

Pursuant to 37 CFR 1.121(d), enclosed are corrected drawing sheets (each labeled "Replacement Sheet"). The following revisions have been made to conform them to the specification:

Figure 1 -- reference numeral 74 changed to 84.

Figure 1B -- reference numeral 70 changed to 71 and lead line inserted from reference numeral 18 to appropriate place in the drawing.

Figure 3B -- reference numeral 31 changed to 33.

Figure 3E -- reference numeral 31 and its lead line removed.

Figure 7 -- reference numeral 31 changed to 33.

It is respectfully submitted these changes are supported by the specification and the drawings have now been corrected. Approval is respectfully requested.

Additionally, the following changes have been made to the specification to conform it to the drawings:

Page 6, line 7 -- "hoses" has been replaced by "hoses 71"; with the same change being made at line 10 of page 6 and line 12 of page 7.

Page 7, line 19 -- "base" has been changed to "base 38".

Page 7, line 26 -- "tip" has been changed to "tip 32".

Page 8, line 23 -- "end" has been changed to "end 42".

Page 10, line 28 -- "position on" has been changed to "positioned in opening 78".

It is respectfully submitted the drawings and specification conform relative to the matters raised in the Office Action.

D. Objection to Specification

Each of the matters raised by the Examiner at Office Action, page 4, numbered paragraph 6, has been changed as suggested by the Examiner.

E. Minor Claim Suggestions By Examiner

Each of the suggested changes at page 4, numbered paragraph 7 of the Office Action, have been made.

F. 35 U.S.C. § 112 Rejections

Claim 16 has been rejected on the basis that the term "impeller" lacks antecedent basis and that a phrase in the claim lacks clarity. This is the sole basis for rejection of claim 16. No prior art rejections have been entered against it.

Claim 16 is amended accordingly to overcome these rejections by adopting the change suggested by the Examiner at Office Action page 5, numbered paragraph 9. It is therefore respectfully submitted that amended claim 16 overcomes this rejection and is allowable.

The other matters regarding other claims raised by page 5, numbered paragraph 9 of the Office Action, have also been addressed and remedied in the amended claims.

G. 35 U.S.C. § 102 Rejection

Claims 1-5, 18-30 and 43 have been rejected as anticipated by U. S. Patent No. 6,003,534 to inventor Gould ("Gould"). This rejection is respectfully traversed for the following reasons.

Gould has been carefully reviewed. To anticipate under s under § 102, a *prima facie* case must be made that Gould discloses (a) each of the claimed elements, (b) in the arrangement of the claim, (c) as interpreted by one of ordinary skill in the art. Gould does not do so.

Gould discloses a disk-shaped rotor that has a single internal fluid passage 18 machined or formed from its center interior to its outside edge. A cap 21 (see Fig. 3A and Gould col. 4, lines 5-8) encloses passage 18, except for its exit port 20. Void 24, generally opposite passage 18, simply functions to balance the disk by removing mass from that opposite side. As indicated in Figure 3B of Gould, the delivery port 20 of passage 18 spins by each of the many exit ports 7 in the Gould body, one at a time.

In contrast, Applicants' original claim 1, for example, describes "fluid communication with the plurality of outlets of the body" through the "distribution void", so that distribution is made to all the outlets.

When the Gould disk spins, it exposes delivery port 20 "to each outlet port 7 for a substantially equal period of time" (Gould col. 4, lines 33-34). Gould says "the flow stream due to rotation of the rotor is presented to each exit port 7 in turn" (col. 4, lines 27-28). Applicants' claim 1 describes its rotatable fluid pathway being in fluid communication with the plurality of outlets of the body.

Therefore, a *prima facie* case of anticipation is not made out by Gould relative to Applicants' claim 1, and claim 1 is submitted to be allowable over Gould. However, to advance prosecution of the present application, Applicants' claim 1 has been amended to specifically state that the rotatable fluid pathway is external on the member. This is supported throughout Applicants' original specification and claims. Gould intentionally discloses and teaches an internal path through its disc. Applicants' claim 1 defines an external rotatable fluid pathway. Therefore, a specific limitation of claim 1 is missing from Gould. It is therefore respectfully submitted claim 1 is not anticipated by Gould and is allowable over Gould.

Claims 2-5, and 18-30 are dependent upon claim 1 and submitted to be allowable over this anticipation rejection for the reasons expressed in support of claim 1.

Independent claim 43 similarly describes "a rotatable member positioned in the chamber, the rotatable member defining an external substance path in fluid communication with the inlet and a space in fluid communication with the plurality of outlets" (emphasis added). Similar to the reasons discussed above relative to claim 1, it is therefore respectfully submitted Gould does not present a *prima facie* case of anticipation relative to claim 43 and that claim 43 is allowable over Gould, because Gould is an internal path (from its center radially outward to its periphery) Gould has an internal path whereas Applicants' claim 43 defines an "external substance path" on the rotatable member.

H. 35 U.S.C. § 103 Rejection

Claims 12, 13, 15 and 17 have been rejected as being obvious on the basis of Gould. The Examiner states in the rejection that:

"[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to dimension the cross-sectional areas of the body inlet, the spiral full passageway groove, and the plurality of outlets in such a way to optimize equal anhydrous ammonia distribution through the plurality of outlets. These particular dimensions can be determined by using routine experimentation in order to optimize equal distribution of the manifold and do not represent a patentable departure from the teachings of Gould."

Office Action, page 8, first full paragraph. This rejection is respectfully traversed for the following reasons.

To create a *prima facie* case of obviousness, the reference must (a) teach a reason, suggestion or motivation, (b) to modify it in a manner which appears to show or suggest the claimed invention, (c) to one of ordinary skill in the art. In contrast to the conclusion in the Office Action, it is respectfully submitted Gould in no way teaches, suggests or otherwise shows any motivation to achieve the invention of Applicants' claims 12, 13, 15, or 17.

Gould actually teaches:

"[t]he cross-sectional area of the passage 18 (perpendicular to the direction of the flow) is ideally, but not necessarily, slightly less than the total cross-sectional area of all the outlet 7. This allows the flow stream to expand as it exits the delivery port 20 of the passage and move into the delivery chamber 30 from where it exits through the peripheral outlet."

(Gould, col. 4, lines 40-47) (emphasis added). Gould, therefore, explicitly teaches that it wants expansion of the liquid. It therefore teaches away from Applicants' claims, which discuss how the cross-sectional area is substantially constant, specifically to reduce the opportunity for the substance to further expand and create more gas from liquid. Gould does not unequivocally disclose, teach, or suggest this concept—rather, it teaches in a different direction (it similarly mentions this relationship at column 2, lines 58-62).

It is pointed out again that Applicants' specification discloses an embodiment that has a substantially constant cross section from inlet, through passages, and to outlet (see Applicants' specification 13 -15 and original claim 14). It is important to this embodiment of Applicants' invention to avoid an expanding passage. An expanding passage reduces pressure and allows more liquid to be converted to gas (causing problems with uniform flow division because more low density gas is present to supplant the volume of liquid). Thus, an expanding passage would deter, and not help, reduction of variation in distribution. Gould has no teaching about using inlet size to determine the passage size. Rather, as cited above directly from Gould, Gould teaches the concept of expanding the size of the passage.

In light of the fact that Gould teaches in a different direction than Applicants' invention, there is no basis to support a *prima facie* case of obviousness on the grounds one of ordinary skill in the art would be motivated to equalize distribution by "routine experimentation", as alleged in the rejection. There must be specific, identifiable support for such a conclusion in the cited reference. The only suggestion is in Applicants' specification and claims, which can not be used to fill any gaps in teaching in the Gould.

As stated throughout Applicants' specification, and as stated in the preamble of Applicants' claim 1, an object of the invention is reducing variations in distribution. Because Gould specifically has one outlet that directs fluid under pressure sequentially to its outlets, there will be different pressures at different outlets at any given time. And Gould specifically teaches that it wants expansion of the gas. In contrast, Applicants' invention is aimed at maintaining pressure substantially equal at all outlets.

No other reference is cited that explicitly does suggest any advantage to the particular limitations of Applicants' claims 12, 13, 15 and 17. This is true regarding the cross-sectional areas of claims 12 and 13, the angle of the wall in claim 15, or the plurality of spiral grooves in claim 17.

Thus, there is no teaching, suggestion, or motivation to modify Gould in that manner and it is therefore respectfully submitted the *prima facie* case of obviousness is not made out by Gould and that these claims are allowable.

Additionally, each of claims 12, 13, 15, and 17 are dependent from claim 1. They are also submitted to be allowable for the reasons expressed in support of Applicants' claim 1. Gould does not teach an external fluid pathway.

I. New Claims 45-49, 51-53, 59-61, 63-64, 66-80

Several additional new claims are submitted with this response. The reasons they are submitted to be allowable are set forth below.

New dependent claims 45-49 are dependent from independent claim 43, which is submitted to be allowable for reasons previously stated. Claim 43 has the limitation that the rotatable member has "an external substance path". This is not disclosed nor taught in Gould. Therefore, it is respectfully submitted that dependent claim 45-49 are allowable for the same reasons claim 43 is allowable. Additionally, new dependent claim 45, describing the fluid path as having a constant cross section area, is based on original claim 14 (which has been found allowable). Gould has no teaching of constant cross section area, as discussed above. New claim 46 describes multiple fluid passageways (nowhere taught by Gould), is based on original claim 17, and has support at specification page 4, line 26 and the drawings. New claim 47 has support at specification page 8, lines 5-6 and Gould does not have multiple outlets in its rotating disk. New claim 48 defines spiral grooves, is based on original claim 17, and is nowhere taught by Gould. New claim 49 defines three sources of fluid at the distribution outlet (from the three spiral grooves), again nowhere taught by Gould (supported at specification page 8, lines 5-6).

New dependent claims 51-53 are dependent upon allowable claim 50 (which is a combination of allowable claim 6 with its base claim 1 and intervening claims 4 and 5). It is submitted dependent claims 51-53 are allowable for being dependent upon an allowable independent claim.

New dependent claims 59-61 are basically similar to new claims 51-53, and are dependent upon new independent claim 54, which has been indicated to be allowable (combination of original allowed claim 7 with base claim 1 and intervening claim 4).

New dependent claims 63-64 are basically similar to new claims 52-53, and are dependent upon new independent claim 62, which has been indicated to be allowable (combination of original allowed claim 14 with base claim 1 and intervening claims 4-6).

New dependent claims 66-68 are basically similar to new claims 51-53, and are dependent upon new independent claim 65, which has been indicated to be allowable (combination of original allowed claim 44 with base claim 43).

New independent claim 69 is a combination of amended claim 16, its base claim 1, and intervening claim 4. As discussed earlier, the only rejection against dependent claim 16 was under § 112, and it is submitted this has been remedied. It is therefore respectfully submitted new independent claim 69 is allowable.

New dependent claims 70-72 are basically similar to new claims 51-53, and are dependent upon new independent claim 69, which is submitted to be allowable (see immediately preceding paragraph).

New independent claim 73 is a combination of original claim 5, its base claim 1, and intervening claim 4. Original claim 5 specifically describes a fluid pathway on the member that comprises "an external supply groove". As discussed earlier, Gould does not teach an external fluid pathway. It teaches an internal passage. Therefore, new independent claim 73 is submitted to be allowable.

New dependent claims 74-76 are basically similar to new claims 51-53, and are dependent upon new independent claim 73, which is submitted to be allowable (see immediately preceding paragraph).

New independent claim 77 is a combination of original dependent claim 14, its base claim 1, and intervening claims 4-6. Gould does not disclose or teach an "external supply groove", as called out in claim 5, or such a supply groove "in fluid communication with the

plurality of outlets of the body" as called out in claim 5. Gould also does not disclose or teach the concept of "generally constant cross sectional area along the supply groove, distribution groove, inlet, and the sum of the outlets" as called out in claim 12 (also, see comments above regarding claim 62). As quoted above, Gould at col. 2, lines 57-65, and col. 4, lines 41-47, specially state the cross-sectional area of the passage is "lightly less than the total cross-sectional area of all the radial outlet ports from the housing", and says it allows "the flow stream through the manifold to expand as it exits the delivery port of the passage". This is in direct contrast to new claim 77. Therefore, it is respectfully submitted new claim 77 is allowable.

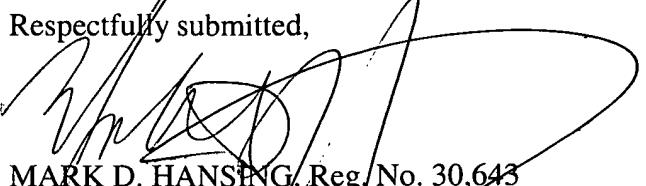
New dependent claims 78-80 are basically similar to new claims 51-53, and are dependent upon new independent claim 77, which is submitted to be allowable (see immediately preceding paragraph).

J. Conclusion

It is respectfully submitted all matters raised in the Office Action have been addressed and remedied and that the application is in form for allowance. Favorable action is respectfully requested.

Enclosed is a check for \$2,400.00 for the new claims (6 new independent claims over three in number at \$200 each, and 24 new total claims over the prior total number at \$50 each). It is not believed any additional fee or any extension of time is required for entry of this response, however, if any fee request has been inadvertently omitted, please consider this a request therefore and charge any required fee to Deposit Account No. 26-0084.

Respectfully submitted,



MARK D. HANSING, Reg. No. 30,643
McKEE, VOORHEES & SEASE, P.L.C.
801 Grand Avenue, Suite 3200
Des Moines, Iowa 50309-2721
Phone No: (515) 288-3667

Fax No: (515) 288-1338
CUSTOMER NO: 22885

Attorneys of Record

-MDH/bja-

Enclosures: Replacement Drawings (5 sheets)